We claim:

1. A method of making a crosslinked polymer comprising the steps of:

a) providing a polymer comprising first pendent groups which include a group according to the formula $-SO_2Cl$; and

b) crosslinking said polymer by a process that comprises removal of the $-SO_2Cl$ group.

2. The method according to claim 1 wherein said step b) of crosslinking said polymer comprises exposure of said polymer to electromagnetic radiation.

3. The method according to claim 2 wherein said electromagnetic radiation is in the ultraviolet band.

4. The method according to claim 1 wherein said step b) of crosslinking said polymer comprises exposure of said polymer to a radical initiator.

5. The method according to claim 4 wherein said radical initiator is selected from the group consisting of thermal initiators and photochemical initiators.

6. The method according to claim 1 wherein said first pendent group is according to the formula: $-R^1-SO_2Cl$, wherein R^1 may be straight-chain, branched, cyclic, heteroatomic, polymeric, halogenated, fluorinated or substituted.

7. The method according to claim 1 wherein said polymer additionally comprises second pendent groups which include a group according to the formula $-SO_2X'$ wherein each X' is independently selected from the group consisting of F and –OH.

8. The method according to claim 6 wherein said polymer additionally comprises second pendent groups according to the formula: $-R^1-SO_2F$.

9. The method according to claim 1 wherein said polymer is fluorinated.

10. The method according to claim 1 wherein said polymer is highly fluorinated.

11. The method according to claim 1 wherein said polymer is perfluorinated.

12. The method according to claim 1 wherein said method additionally comprises, prior to said step b), the step of:

c) forming said polymer into a membrane.

13. The method according to claim 12 wherein said membrane has a thickness of 90 microns or less.

14. The method according to claim 7 wherein said method additionally comprises, after said step b), the step of:

d) converting any remaining groups according to the formula $-SO_2X'$ to sulfonic acid groups.

15. The method according to claim 6 wherein R^1 is an aliphatic linking group containing 1-20 carbon or oxygen atoms.

16. The method according to claim 6 wherein R^1 is $-O-R^{12}-$ wherein R^{12} is a branched or unbranched perfluoroalkyl or perfluoroether group comprising 1-15 carbon atoms and 0-4 oxygen atoms.

17. The method according to claim 6 wherein R^1 is $-O-(CF_2)_4-$.

18. The method according to claim 6 wherein R^1 is $-O-CF_2-CF(CF_3)-O-CF_2-CF_2-$.

19. The method according to claim 1 wherein step a) of providing a polymer comprises the steps of:

e) providing a polymer comprising pendent groups which include a group according to the formula $-SO_2F$; and

f) converting at least a portion of said $-SO_2F$ groups to $-SO_2Cl$.

20. The method according to claim 1 wherein step a) of providing a polymer comprises the steps of:

e) providing a polymer comprising first pendent groups which include a group according to the formula $-SO_2H$ and second pendent groups which include a group according to the formula $-SO_2F$; and

f) converting said $-SO_2H$ groups to $-SO_2Cl$.

21. The method according to claim 14 wherein the resulting polymer has an equivalent weight of less than 1200.

22. The method according to claim 12 wherein step c) comprises imbibing said mixture into a porous supporting matrix.

23. The method according to claim 22 wherein said porous supporting matrix is a porous polytetrafluoroethylene web.

24. The method according to claim 1 wherein said method additionally comprises, prior to said step b), the step of:

g) contacting said polymer with a crosslinking agent.

25. The method according to claim 1 wherein said crosslinking agent is a polyaromatic species.

26. The method according to claim 1 wherein said crosslinking agent is a polyvinyl species.

27. A crosslinked polymer made according to the method of claim 1.

28. A crosslinked polymer made according to the method of claim 2.

29. A crosslinked polymer made according to the method of claim 3.

30. A crosslinked polymer made according to the method of claim 4.

31. A crosslinked polymer made according to the method of claim 5.

32. A crosslinked polymer made according to the method of claim 6.

33. A crosslinked polymer made according to the method of claim 7.

34. A crosslinked polymer made according to the method of claim 8.

35. A crosslinked polymer made according to the method of claim 9.

36. A crosslinked polymer made according to the method of claim 10.

37. A crosslinked polymer made according to the method of claim 11.

38. A polymer electrolyte membrane made according to the method of claim 12.

39. A polymer electrolyte membrane made according to the method of claim 13.

40. A crosslinked polymer made according to the method of claim 14.

41. A crosslinked polymer made according to the method of claim 15.

42. A crosslinked polymer made according to the method of claim 16.

43. A crosslinked polymer made according to the method of claim 17.

44. A crosslinked polymer made according to the method of claim 18.

45. A crosslinked polymer made according to the method of claim 19.

46. A crosslinked polymer made according to the method of claim 20.

47. A crosslinked polymer made according to the method of claim 21.

48. A polymer electrolyte membrane made according to the method of claim 22.

49. A polymer electrolyte membrane made according to the method of claim 23.

50. A crosslinked polymer made according to the method of claim 24.

51. A crosslinked polymer made according to the method of claim 25.

52. A crosslinked polymer made according to the method of claim 26.